Applicant	:	Roland Egon Ryter
Application No.	:	10/577,978
Filed	:	May 1, 2006
For	:	APPARATUS FOR DETERMINING A FREQUENCY OFFSET ERROR AND RECEIVER BASED THEREON

Examiner	:	Phuong M. Phu
Art Unit	:	2611
Docket No.	:	853663.418USPC
Date	:	November 6, 2009

Examiner Phu:

Please find attached hereto proposed claim amendments.

I would appreciate the opportunity to discuss claims amendments to the following claims: 14, 34-37 and 40-42.

Claim 14: add allowable subject matter from claim 9.

Claim 34: As filed, claim 34 generally corresponded to claim 1 (as of April 3, 2009) and claim 8. In the proposed amended claim, amended claim 34 corresponds to claim 8 and is now dependent on allowed claim 17.

Claim 35: Corresponds to claim 5. Amended to depend from allowed claim 17.

Claim 36: Corresponds to claim 2. Amended to depend from allowed claim 31.

Claim 40: As filed, claim 40 generally corresponded to claim 1 (as of April 3, 2009) and claim 11. In the proposed amended claim, amended claim 40 corresponds to claim 11 and is now dependent on allowed claim 31.

Claim 41: Corresponds to claim 5. Amended to depend from allowed claim 20.

Claim 42: Corresponds to claim 7. Amended to depend from allowed claim 28.

The Power of Attorney covers practitioners at Seed IP Law Group PLLC associated with customer number: 38106. I am such an attorney, and my registration number is 47,028.

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    I appreciate your taking the time to review this. Please call me so that we may schedule an interview.

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Proposed Amendments to the Claims:

Listing of Claims:

1.   (Previously Presented)   Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled, and

digital processing means for calculating a current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, wherein the digital means for performing the minimum-maximum evaluation determines whether expected peaks of positive and negative half-waves of the frequency demodulated signal have predefined distances.

2.   (Previously Presented)   The apparatus of claim 1, wherein the digital means for performing a correlation comprise a correlator, a peak detector and a comparator.

3.   (Previously Presented)   The apparatus of claim 1, wherein the digital means for performing a minimum-maximum evaluation comprise two subtractors and two comparators.

4.   (Previously Presented)   The apparatus of claim 1, wherein the digital processing means comprise an average detector, an offset register, and an offset compensator to subtract the current offset stored in the offset register from the frequency demodulated signal.

5.   (Previously Presented)   The apparatus of claim 1, wherein the digital means for performing a correlation and the digital means for performing a minimum-maximum

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evaluation both provide signals to the digital processing means in order to cause the digital processing means to cancel the current offset.

6.   (Previously Presented)   The apparatus of claim 1, comprising two comparators serving as limiters followed by building blocks arranged to extract said frequency demodulated signal from a frequency shift keyed modulated signal.

7.   (Previously Presented)   The apparatus of claim 1 wherein the digital means for performing a correlation correlates the frequency demodulated signal with a time-limited sine wave signal, and determines whether the result of this correlation exceeds a certain threshold.

8.   (Previously Presented)   The apparatus of claim 1, wherein the digital means for performing a correlation provides an output signal indicating that the a criterion for a known sequence is fulfilled.

9.   (Canceled)   The apparatus of claim 1, wherein the digital means for performing a minimum-maximum evaluation determine whether expected peaks of positive and negative half-waves of the frequency demodulated signal have predefined distances.

10.   (Previously Presented)   The apparatus of claim 1, wherein the digital means for performing a minimum-maximum evaluation calculates two subtractions in order to compare four received symbols with corresponding amplitudes.

11.   (Previously Presented)   The apparatus according to claim 1, wherein the frequency demodulated signal is a digital coded signal.

12.   (Previously Presented)   The apparatus of claim 4, wherein the offset compensator is employed in order to continuously subtract a value stored in the offset register from the frequency demodulated signal.

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13.   (Previously Presented) The apparatus of claim 4, wherein the average detector is a sliding average detector that continuously generates a mean value of the frequency demodulated signal.

14.   (Currently Amended) A receiver comprising:

an apparatus for determining a frequency offset error, the apparatus including:

an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by,

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled, and

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled, said apparatus further comprising digital processing means to calculate the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, wherein the digital means for performing the minimum-maximum evaluation determines whether expected peaks of positive and negative half-waves of the frequency demodulated signal have predefined distances.

15.   (Previously Presented) The receiver of claim 14, comprising an analog front-end and a digital back-end, said apparatus for determining a frequency offset error being part of said digital back-end.

16.   (Previously Presented) The receiver of claim 14 being designed to receive and process FSK or GFSK modulated antenna signals.

17.   (Previously Presented) Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled, wherein the digital means for performing a correlation comprise a correlator, a peak detector and a comparator,

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digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled, and

digital processing means for calculating a current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled.

18.   (Previously Presented)   The apparatus of claim 17 wherein the digital means for performing a minimum-maximum evaluation comprise two subtractors and two comparators.

19.   (Previously Presented)   The apparatus of claim 17 wherein the digital means for performing a minimum-maximum evaluation calculates two subtractions in order to compare four received symbols with corresponding amplitudes.

20.   (Previously Presented)   Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled, wherein the digital means for performing a minimum-maximum evaluation comprise two subtractors and two comparator, and

digital processing means for calculating a current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled.

21.   (Previously Presented)   The apparatus of claim 20 wherein the digital processing means comprise an average detector, an offset register, and an offset compensator to subtract the current offset stored in the offset register from the frequency demodulated signal.

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22.   (Previously Presented)   The apparatus of claim 20 wherein the digital means for performing a minimum-maximum evaluation calculates two subtractions in order to compare four received symbols with corresponding amplitudes.

23.   (Previously Presented)   Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled, and

digital processing means for calculating a current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, wherein the digital processing means comprise an average detector, an offset register, and an offset compensator to subtract the current offset stored in the offset register from the frequency demodulated signal.

24.   (Previously Presented)   The apparatus of claim 23 wherein the digital means for performing a correlation correlates the frequency demodulated signal with a time-limited sine wave signal, and determines whether the result of this correlation exceeds a certain threshold.

25.   (Previously Presented)   The apparatus of claim claim 23, wherein the frequency demodulated signal is a digital coded signal.

26.   (Previously Presented)   The apparatus of claim 23, wherein the offset compensator is employed in order to continuously subtract a value stored in the offset register from the frequency demodulated signal.

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27. (Previously Presented) The apparatus of claim 23, wherein the average detector is a sliding average detector that continuously generates a mean value of the frequency demodulated signal.

28. (Previously Presented) Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled,

digital processing means for calculating the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, and

two comparators serving as limiters followed by building blocks arranged to extract said frequency demodulated signal from a frequency shift keyed modulated signal.

29. (Previously Presented) The apparatus of claim 28 wherein the digital means for performing a correlation correlates the frequency demodulated signal with a time-limited sine wave signal, and determines whether the result of this correlation exceeds a certain threshold.

30. (Previously Presented) The apparatus of claim 28 wherein the digital means for performing a correlation provides an output signal indicating that the a criterion for a known sequence is fulfilled..

31. (Previously Presented) Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

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digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled,

digital processing means for calculating the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, and

wherein the digital means for performing a correlation correlates the frequency demodulated signal with a time-limited sine wave signal, and determines whether the result of this correlation exceeds a certain threshold.

32.   (Previously Presented)   The apparatus of claim 31 wherein the digital means for performing a correlation and the digital means for performing a minimum-maximum evaluation both provide signals to the digital processing means in order to cause the digital processing means to cancel the current offset.

33.   (Previously Presented)   The apparatus of claim 31 wherein the frequency demodulated signal is a digital coded signal.

34.   (Currently Amended)   ~~Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by~~

~~digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,~~

~~digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled,~~

~~digital processing means for calculating the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, and~~

The apparatus of claim 17 wherein the digital means for performing a correlation provides an output signal indicating that the a criterion for a known sequence is fulfilled.

35.   (Currently Amended)   The apparatus of claim 17 ~~34~~ wherein the digital means for performing a correlation and the digital means for performing a minimum-maximum

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evaluation both provide signals to the digital processing means in order to cause the digital processing means to cancel the current offset.

36.   (Currently Amended)   The apparatus of claim 31 34 wherein the digital means for performing a correlation comprise a correlator, a peak detector and a comparator.

37.   (Previously Presented)   Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by

digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,

digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled,

digital processing means for calculating the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, and

wherein the digital means for performing a minimum-maximum evaluation calculates two subtractions in order to compare four received symbols with corresponding amplitudes.

38.   (Previously Presented)   The apparatus of claim 37 wherein the frequency demodulated signal is a digital coded signal.

39.   (Previously Presented)   The apparatus of claim 37 comprising two comparators serving as limiters followed by building blocks arranged to extract said frequency demodulated signal from a frequency shift keyed modulated signal.

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40. (Currently Amended) ~~Apparatus for determining a frequency offset error, comprising an input for receiving a digitally coded frequency demodulated signal, said frequency demodulated signal being processed by~~

~~digital means for performing a correlation in order to determine whether a correlation criterion is fulfilled,~~

~~digital means for performing a minimum-maximum evaluation in order to determine whether a minimum-maximum criterion are fulfilled,~~

~~digital processing means for calculating the current offset of the frequency demodulated signal and to cancel the current offset if both criteria are fulfilled, and~~

The apparatus of claim 31 wherein the frequency demodulated signal is a digital coded signal.

41. (Currently Amended) The apparatus of claim 20 ~~40~~ wherein the digital means for performing a correlation and the digital means for performing a minimum-maximum evaluation both provide signals to the digital processing means in order to cause the digital processing means to cancel the current offset.

42. (Currently Amended) The apparatus of claim ~~40~~ 28 wherein the digital means for performing a correlation correlates the frequency demodulated signal with a time-limited sine wave signal, and determines whether the result of this correlation exceeds a certain threshold.

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